

*MANITOBA
HORTICULTURAL
YEAR BOOK
1925*



*Report for 1925 of the Manitoba
Horticultural and Forestry
Association.*

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Vegetable Garden at Manitoba Agricultural College, Winnipeg.

Report of the Secretary-Treasurer, 1925

To the Officers and Members of the Manitoba Horticultural and Forestry Association:

As Secretary-Treasurer, I beg to submit herewith a report of the activities concerning the Association for the year 1925, together with a statement of its financial standing.

The year just ending has one outstanding record that should be noted; namely, the damaging action of the 1924-25 winter. For some reason Fruit varieties which up to this period had been considered hardy were completely winter killed, and in many other instances varieties were badly damaged. Plums, Plum-hybrids and Raspberries suffered most. Growers of long experience have stated that it was the hardest season encountered within the past twenty years. The cause is open to a good deal of speculation and discussion.

Vegetable crops, on the whole, enjoyed a good season. Potatoes yielded very high. The spring was late and cold. Severe frosts encountered in the late fall destroyed many crops which at that time had not been harvested.

Vegetables from Manitoba exhibited at the Royal Show at Toronto in November were very successful.

The exhibitions held by the local horticultural societies, also the Winnipeg Garden Show, were all that could be desired.

Our membership remains about stationary. The membership of the affiliated societies shows a slight increase. The total membership at present is 2,083.

A field day was arranged for at the Agricultural College, but, due to weather conditions, it had to be postponed. At the postponed meeting the Honorary Life Membership certificate was presented to Dr. H. M. Speechly.

The premiums distributed by the Association showed a very large increase over the previous year.

The Western Gardener and Beekeeper ceased publication with the July issue. For the members who subscribed to the Western Gardener through the Association, a refund was made by the publishers. To all these members a year's subscription to the Canadian Horticulturist was arranged for by the Association. There is great need for a horticultural magazine adapted to the three prairie provinces.

The 1925 annual convention, held January 13-14 in the Marlborough Hotel, Winnipeg, was a decided success.

The 1924 Annual Year Book of the Association was printed with the financial assistance of the Provincial Department of Agriculture. Copies of the Year Book were sent out to all members of the Association and affiliated societies.

Your Directors met nine times during the past year to transact business relating to the welfare of the Association.

Following is the financial standing of the Association for the year ending December 31st, 1925:

RECEIPTS

Bank Balance December 31, 1924	\$324.99	
Cash on hand December 31, 1924	3.50	
		\$ 328.49
Membership Fees	366.50	
Magazine Fees	110.00	
	476.50	
Less Commission	6.00	
		470.50
Affiliation Fees		329.33
		<hr/> \$1,128.32

DISBURSEMENTS

Premiums including Postage, Packing, Express, etc.	\$469.67	
Less Credit	20.53	
		\$ 449.14
Postage, Post Cards and Excise Tax		26.00
Annual Convention, Marlborough Hotel	144.50	
Less Sale of Tickets	94.50	
		50.00
Printing and Stationary		143.63
Publications	187.80	
Less Refund	62.48	
		125.32
Miscellaneous—		
Honorarium Secretary	50.00	
Auditor	5.00	
Flowers	10.00	
Diploma	10.00	
Operator Picture Machine	5.00	
Certificate	4.50	
Frame	2.35	
Exchange (Bank)82	
		88.07
		\$ 882.16
Bank Balance December 31, 1925 (Dominion Bank, Winnipeg) ..		229.55
Cash on Hand		16.61
		\$1,128.32

Respectfully submitted,

J. R. ALMEY,
Secretary.

Winnipeg Garden Show, 1925

Held in Winnipeg Rink, Winnipeg, August 31st to September 5th, Under the Auspices of the Manitoba Horticultural and Forestry Association

To the Manitoba Horticultural and Forestry Association:

The weather during the week of the 1925 Winnipeg Garden Show was most favorable, and while the gate receipts did not show any great improvement, this fact is partly due to the number attending the luncheon, who were not recorded with the gate receipts. A comparative statement of entries shows the number of entries to have increased as follows:

1918	1,400	1922	1,990
1919	1,550	1923	2,028
1920	Not Reported	1924	2,168
1921	1,860	1925	2,839

We were very fortunate in having, to open our Show, Mr. D. C. Coleman, First Vice-President of the Canadian Pacific Railway Co. On behalf of the Canadian Pacific Railway Co., he presented us with a handsome silver trophy, to be known as the Shaughnessy Trophy, and to be used for such purposes as are considered most suitable by the management.

Several suggestions as to the improvement of next year's show have been placed in the hands of the Secretary, and will be accessible to the new Board

of Management. All the members of the Board took a keen interest in the affairs of the show throughout the season, and particularly during the time of holding the exhibition.

The financial statement is appended hereto.

I wish to thank all those who assisted in making the 1925 show the success it was.

Respectfully submitted on behalf of the Board of Management,

(Signed) CHAS. H. BUDD,

Chairman 1925 Show.

WINNIPEG GARDEN SHOW—1925—FINANCIAL STATEMENT

RECEIPTS

Cash in Bank, 15th December, 1924	\$ 9.27	
Add—Old outstanding cheque cancelled	1.50	
		\$ 10.77
Grants and Donations	1,767.65	
Entrance Fees	426.35	
Advance Sale of Tickets	\$ 31.00	
Gate Receipts	1,014.53	
	1,045.53	
Club Luncheon, Net Proceeds	87.36	
Advertisements in Prize List 1924	\$ 55.00	
1925	120.00	
	175.00	
Part Proceeds of Auction Sale	55.45	
Total Receipts		3,557.34
Accounts Receivable Still Outstanding—		
Advertising		55.00
Auction Sale		14.00
		\$3,637.11

DISBURSEMENTS

Prizes — 1923	\$ 1.50	
1924	2.10	
1925	1,746.55	
	\$1,750.15	
Advertising	361.07	
Salaries and Wages	384.05	
Printing and Stationary	383.71	
Rent of Rink	200.00	
Cleaning and Engraving Cups	45.00	
Lumber (including hauling and transfer charges)	90.11	
Insurance	4.60	
Honorarium — 1924	\$ 50.00	
1925	50.00	
	100.00	
Meals for Staff	36.00	
Hire of Chairs	30.00	
Interest and charges on overdraft	1.98	
Sundry Expenses	43.44	
Total Disbursements		\$3,430.11
Cash in Bank, 31st December, 1925	131.00	
Cash on Hand, 31st December, 1925	7.00	
Accounts Receivable, 31st December 1925	69.00	
		207.00
		\$3,637.11



Papers Read at Annual Conventions of 1925 and 1926

(Both Conventions held in Marlborough Hotel, Winnipeg—January 13 and 14, 1925; and February 2 and 3, 1926).

SOME DESIRABLE PERENNIALS FOR WESTERN GARDENS

By H.M. SPEECHLY, M. D., Winnipeg

In this discussion I am not concerned to make a difference between fibrous-rooted or bulbous-rooted perennials, and shall include some bulbs, because a perennial plant is such on account of its capacity to grow in the soil for several years and not because it has one particular kind of rot.

Protection

It may be well to re-state the conditions which make for the successful cultivation of perennials. First and foremost, the protection of a tree-belt and of hedges is absolutely necessary for our Western gardens: trees on the north and west sides to break the violent sweep of our north-west winds, hedges on the south and east sides, where it is necessary to allow all the sunlight to come in. Frost is less likely to spoil a garden if there is good hedge protection.

Next, in laying out your borders, you must not place them too near either tree or hedge. That Balm of Gilead tree will sucker a dozen yards away. That caragana hedge will dry out the soil for ten feet.

Preparation of Soil

Thirdly, dig the soil deep down to the subsoil, say two feet, if you will, and then trench well. Into the trenches put a foot of well-rotted manure. Our black soil is excellent for perennials, but you will get better results if you manure well from the beginning. After two years it will be good policy to dig in some well-rotted manure wherever there is space between your plants each fall.

Value of a Good Selection

It is well to remember that a good selection of perennials adds enormously to the success and interest of a garden. Perennials are there to stay; they are certain starters if well and truly planted; they provide a succession of

bloom if rightly selected; and, whether you have a wet or dry season, you will always have some plant that likes one kind of season better than another. When you show your friends around your flower garden, you can spring all sorts of pleasant surprises on them, and, if you make a point of always having a few annuals in the proper season, you will have wonderful satisfaction out of your plots of flowers.

Finally, if you ascertain the height of your perennials when in full bloom, you will avoid the mistake of putting, say, the Carpathian hare-bell behind larkspurs.

I am not now concerned to bring to your attention well-known and often-discussed perennials, such as larkspurs, columbines, bleeding-heart, iris, peonies, and so on, but rather to direct attention to certain desirable perennials which are, perhaps, less known and less grown than the better-known types. In 1914 I made a list of all perennials with which I and other gardeners had acquaintance in Western gardens, and intended to publish this list with hints on cultivation, but the war nipped that effort in the bud.

Lesser Known Sorts

Here are some interesting perennial bulbs which require somewhat similar cultivation, three being conspicuously blue, two white, and one red, all belonging to the order Liliaceae. I refer to the Siberian Squill, a heavenly blue; the Grape Hyacinth, china blue with a rim of white; Glory-of-the-Snow, light blue and white; all early spring bloomers in about that order, the Squill blooming any time between April 10 and May 1. You may expect the other two late in May.

The two white-flowered plants are little known, but proved hardy in Pilot Mound. Both are Alpine and European

In origin—St. Bernard's Lily (*Anthericum liliago*) and St. Bruno's Lily (*Paradisea liliastrum*), which here throw slender spikes of sweet-scented, exquisite white flowers about 8 or 10 inches in height.

In striking contrast to these two, and blooming in August or late July, is the Siberian Coral Lily, bright as a ripe tomato in color. All these bulbs are planted in the fall, three or four inches deep, and like a liberal allowance of sand.

Let us now take some fibrous-rooted perennials and pick several blues because this color is very desirable in any garden. The earliest is surely that dwarf, pale blue Phlox, which grows abundantly in Ontario woods—*Phlox divaricata*—which grows delightfully in rock gardens as well as in borders, in clumps and masses. Our prairie soil suits it well, and it may be transplanted both in the fall and in the spring. As it is only 6 or 8 inches in height, it must be in the foreground. Jacob's ladder, 18 inches high, and the Carpathian Harebell, both European in origin, bloom about the same time, and, if I remember rightly, so does Goat's Rue, but of the three, for color and charm, give me the *Campanula Carpatia*. Forget-me-Not is well worth growing for two or three seasons amongst stones, more or less buried in the soil, but it is rather liable to harbor cutworms.

The Chinese plants of the *Campanula* order, known as *Platycodon*, show a darker shade of blue, especially the Balloon Flower, and are quite hardy in sheltered gardens.

Taller than these, and running up to two feet in height, is the tall member of the Speedwell family, *Veronica spicata*, one of the hardiest of our blue-flowered perennials.

I never grew the Spider-wort or *Tradescantia*, but I have seen it growing elsewhere in Manitoba. If I remember rightly, it has flowers that last for a day only, with a very attractive shade of blue.

There is, however, no such light blue as that of another day-flower, the Perennial Flax. See it shimmering in the sunlight after a night's rain, when the sun triumphs over a "misty, moisty morning," in late June. This flax is a

greedy plant and, unless you keep it severely thinned, it will become a nuisance.

And here I would warn you against another possible nuisance in your perennial bed in the shape of the rose-colored Chinese Double *Convolvulus*, known as *Calystegia pubescens*. Banish it to some isolated fence or plot where nothing else grows and you will see it to advantage, but it suckers greedily into every other plant in a flower bed.

I have always failed to winter the purple Foxglove, but the yellow variety, *Digitalis ochroleuca*, will flourish.

Two yellows I would commend as being both bright and early, ready to flower early in June, the Leopard's Bane (*Doronicum astrictum*) and that European Chamomile known as *Anthemistinetoria*, a great bloomer and easy to cultivate almost anywhere.

There is a shrubby sort of plant which you don't often see in Western gardens, though it is hardy. I refer to *Dictamnus Fraxinella*, whose dark leaves are almost holly-like in appearance. It throws a deliciously scented spike of pale purplish-white flowers, scented like lemons, and is sometimes called the "Gas Plant" or "Burning Bush," because its bruised leaves emit an inflammable vapor on contact with a flame. It was introduced into England from the Caucasus Mountains in 1596.

One would think that the Stone-crop family would supply several hardy perennials, but the only one I know is the purple-flowered *Sedum spectabile*, a Chinese plant blooming quite late in August.

I wonder if anyone has experience of other members of the Mullein family? The only one I know and like is the *Verbascum phoeniceum*, which flowers purple, pink, and pinky-white at the end of June or early July, beautiful flat cups of bloom laid on long stems, whose only fault is their tendency to lie down in the mud when it rains heavily.

A very late cousin of the Painted Daisy and the Shasta Daisy is the September-blooming *Chrysanthemum* rejoicing in the descriptive title of *Uliginosum*, a very hardy plant throwing stems two feet or more in height, crowned with fair-sized white florets.

Protect the clump from those early frosts in the second week of September, which usually, but not this year past, spoil the annuals, and you will have cut flowers right on into October. This plant grows well against a house and should always be a background plant in a perennial border.

I will end with a warning—Don't be deluded by catalogues into believ-

ing that the African Torch Lily or Red-hot Poker, named after Kniphof, a European botanist of some centuries back, is hardy for Manitoba; nor that the beautiful Chinese plant named, ponderously, *Incarvillea delavayi*, will winter in our climate. Treat them as you treat Gladioli or Dahlias, if you will, but don't leave them out after early October or you will be disappointed.

PREVENTING FRUIT DISEASES

By G. R. BISBY, Manitoba Agricultural College, Winnipeg.

Most of you realize that we have certain fruit diseases already with us, and you will appreciate that, with time and the extension of fruit growing, there will be also an extension of the pests, unless steps are taken at an early date to check the development of some of them. We always find, in a new country, that crops are at first grown with comparatively little trouble from plant diseases; a few troubles may be brought in here and there with the seed or nursery stock that is imported, and certain diseases may pass from wild native plants to the related new cultivated plants. So long, however, as the orchards and gardens are scattered and separated, there is little spread of the fruit diseases. As time goes on, new diseases arrive; larger orchards and more orchards permit the greater accumulation and spread of pests. With plant diseases, an ounce of prevention is worth far more than a pound of cure, because we seldom even attempt to cure a sick plant.

Plant diseases should, if possible, be kept out of a region. The Dominion Government, under the Destructive Insect and Pest Act, requires the inspection of nursery stock upon entry from foreign countries, and, if any pest or disease is found, the shipment is fumigated or destroyed. This service is of much value to those who grow fruits. In spite of all precautions, however, pests will get in. Whenever possible, a disease should be annihilated if it is found in an orchard or garden. I want to speak in a moment of one or two diseases that everyone who

can, and especially every nurseryman, should endeavor to annihilate.

Let me pause a moment in this gloomy dissertation to remark that the fruit crops of Manitoba are, by comparison with most other fruit-growing areas in the world, small sufferers from plant diseases. Furthermore, our climate conditions are such as to preclude the development of the epidemics of certain diseases which necessitate extensive spraying programmes in moister regions.

Diseases of the West

I shall not weary you with a detailed discussion of all the diseases of fruit crops which we have found in Manitoba. I shall only mention some of them briefly, and speak more particularly of one or two that we should endeavor to eradicate, and for which there is need of nursery inspection.

APPLE.—Fire blight is a serious disease once it gets established in an orchard. This disease is characterized by the killing of young branches or sprouts, which become conspicuous because the brown dead leaves cling to the dead branches. Such branches should be cut out promptly, and the knife disinfected after each cut.

Apple scab is found in slight amounts throughout the province. I have not seen it causing sufficient damage to necessitate spraying.

Silver leaf of apples and plums is discussed below.

PLUM.—I reported last year that we had been able to control plum pocket

by spraying. This year again we found practically no pocket on the sprayed trees, but we removed 161 plum pockets from one of the few trees we left unsprayed.

Brown rot is likely to be found anywhere in Manitoba. It may not develop abundantly enough under our comparatively dry conditions to necessitate spraying, yet I expect that eventually it will cause considerable loss in wet seasons. At present it will probably be sufficient to remove carefully and destroy fruits showing the soft brown rot as soon as they are found.

Leaf spot, black knot, and scab are not now especially troublesome.

STRAWBERRY leaf spot causes some trouble. New beds should be planted with as healthy plants as it is possible to obtain, and affected leaves might be removed from the plants when they are set out. Fruit rots may cause injury, especially in fruit that is shipped or held for sale. Trouble is also occasionally experienced from rotting of strawberries on the vines. General measures of care and sanitation should be used to lessen these rots.

CURRENTS and GOOSEBERRIES may be affected with a rust (the cluster-cup stage) which affects sedges also. The plant should be given clean surroundings and the sedges should be removed so far as possible from the vicinity of the plantation.

Leaf spot may be lessened by cleaning out and destroying the old leaves, and cane blight may be prevented largely by removing all injured or weakened canes.

RASPBERRIES may show grey bark, a disease in which spots that are at first blue, and finally grey, occur on the canes, especially at the base of the spurs. Some of the spurs may be killed. Proper spraying is of value in lessening this trouble, or it may perhaps better be controlled by removing and destroying old canes showing the disease. Cane blight has also been found, but is not as yet a serious disease, so far as I have seen.

Raspberry mosaic is a disease which I wish to discuss particularly. It occurs practically everywhere in Manitoba and causes much loss. It is an insidious thing, for the plants appear only to be unthrifty, and young plants, such as nursery stock, may not be conspicuously affected; but soon the affected plants yield no good fruit, and they always

serve as centres for the infection of other plants. The raspberry aphid, or plant louse, carries the disease. The variety Herbert is not often found affected, probably because the aphids do not relish this variety. The Herbert also has the virtue of being resistant to powdery mildew, which was, this year, quite prevalent on several other varieties.

Mosaic produces dwarfing of the canes, sparser foliage, with a slight yellowish color, and a somewhat thin growth. There may be mottling or puckering of the leaves, and the suckers show the symptoms especially clearly.

I think I can safely say that every nursery in Manitoba has some raspberry mosaic in it, and it is against raspberry mosaic that nursery inspection is at the moment probably most needed. The control of the disease should involve planting out in an isolated spot as healthy canes as possible, with rigorous subsequent roguing, and, if necessary, secondary planting, until a plantation of healthy canes is obtained. A grower who receives raspberries infected with mosaic can have little success in growing this fruit.

Another disease that is likely to be troublesome is silver leaf, which attacks plum and apple most commonly. The name comes from the appearance of the leaves, which are evident from some distance because of their silvery or leaden color. The cause is a fungus which grows within the wood at the base of a branch, or in the trunk or roots of the tree. This fungus may also grow and produce spores on old poplar or other fallen wood; I have collected it several times on old branches in the bush. Affected branches should be carefully removed and burned. Pruning or other cuts ought to be covered with gas tar or other disinfecting compound. The fungus may enter the trees through winter injuries or other wounds. Control involves the prompt protection of injuries to the fruit trees, and the destruction of affected wood.

There are several other diseases which may be expected, or may even be present already; every fruit grower, especially every nurseryman, should welcome nursery inspection in order to minimize to as great an extent as possible the loss from diseases, which is likely to be increasingly severe unless steps are taken to lessen these troubles.

THE HANSEN HYBRIDS

By W. J. BOUGHEN, Valley River, Man.

It is beyond argument or denial that in the creation of plum fruits suitable to these Prairie Provinces the name of Dr. N. E. Hansen, of Brookings, South Dakota State College, stands pre-eminent. Although located a few hundred miles south, he has had practically the same conditions of climate and soil to consider in selecting breeding material necessary to the making of fruits suitable to Dakota.

That he has succeeded in fruit-breeding is amply proven by a perusal of nursery catalogues issued from Kansas to northern Manitoba. All these periodicals have a chapter devoted to the Hansen hybrid plums.

Some years ago Dr. Hansen said that one million trees of his varieties were sold each year, and we believe, as the years go by, that there is a remarkable increase, because actual trials prove these varieties to be harder than even he anticipated, therefore the range of their success is ever-increasing and, naturally, sale of trees follows the discovery.

Three springs ago, the writer planted five Waneta plums. Dr. Hansen was at our place, and he said it was too far north for Waneta, yet, last year—the earliest summer we ever hope to have—we successfully fruited and ripened this variety. So far it has shown little winter injury, and in southern Manitoba it is regarded as a sure thing. It is a hybrid Japanese plum—Burbank's apple plum by "Terry"—the largest of the native American selections. It often gets to a size of two ounces or over. It is a good yielder and probably the most popular plum in many of the northern states today.

The hardiest of his creations among the Sandcherry hy Japanese plums are Tom Thumb, Opata and Sapa. Tom Thumb is a dwarf tree, yielding prolifically a small red-fleshed plum about one inch in diameter, of excellent cooking and eating quality, and is one of the earliest plums to ripen.

Opata ripens at the same time—from August 15 to September—and sticks well to the tree, being a very

fine eating plum of blackish-red color, but the flesh is greenish-yellow, and its pit is very small for its size. It is very prolific. Two-year trees in the nursery are often loaded with fruit, from the ground to the top—probably 4 or 5 feet, as it is also a vigorous grower. The second year after planting one-year trees the writer has seen several trees bear 12 to 16 quarts of the very best of plums.

Sapa is not quite as hardy as the other two, but is well worth growing for the superb quality of its dark red fleshed fruits, which it bears, like the others, in great abundance each year after planting.

There are others along this line of pedigree, but I shall only name some of them—Sansota, Cheresota, Egyptian, Champa—which are worthy of trial.

He has also a line of aprieot hybrids by plum. These have a distinct aprieot flavor, when preserved. Names of these are: Tokata, which has done well in Indian Head, and Norman Ross says it is the best plum he has raised. Kaga, another one of the pedigree, is Jap orange shaped and is very fine eating and of quite black-red color and very firm. Toka is a reciprocal cross from Tokata, and is very similar.

Then there is another line, made by crossing the Manitoba wild plum with various good sorts of Japanese plums. These are proving hardy up in north-western Manitoba at about 2,000 feet altitude, and thus should stand a chance of success in many places.

There are three of this type—Cree, Pembina and Ojibwa. Cree is a seedling of Burbank's combination plum, which was the best of a lot of 25,000 seedlings. It is a red plum of firm, good quality. Pembina is a cross of Manitoba wild hy Red June, one of the earliest California or Japanese plums, and is very large, an early plum finding great favor by its growers. Ojibwa is a complex hybrid of five species of plum. It is prolific of firm, red, pointed plums, which eat and cook well. There are others, but that is enough for this time.

NEW INTRODUCTIONS AND RESULTS OF 1924 SEASON

By F. L. SKINNER, Dropmore, Man.

The past season has been a very poor one from the horticulturist's point of view. Winter lingered far too long in the lap of spring, the early part of the summer was cold and dry, and early autumn frosts destroyed a great deal of fruit and tender vegetables. Nevertheless, I had some very interesting things in my garden during the past season.

Lilies

All the purple and yellow Turk's cap lilies (*Lilium martagon* and *L. Hansoni*) had their flower buds destroyed by late spring frosts; but one plant of *Lilium martagon album* produced a fine spike of bloom. The flowers of this lily are the same shape and about the same size as those of the Siberian coral lily (*L. tenuifolium*) and its pure white color gives it an added interest, as hardy white lilies are far from common at the present time. The one great difficulty in growing these *martagon* lilies, at the present time, is the fact that imported bulbs usually reach us in a very weak, and sometimes diseased, condition, and too late to be planted out the season they arrive. When we manage to raise our own bulbs from seed, they will form a splendid addition to the list of hardy bulbs that can be cultivated here.

Closely allied to these lilies are two species native to North America from central Minnesota eastward. These are *Lilium superbum* and *L. canadense*. The former has flowers shaped like *L. Hansoni* but of a yellow and red color, heavily spotted brown; once it becomes established, this is a tall and striking lily, but lacks the graceful habit of the drooping bells of *L. Canadense*.

Seed From Siberia

A few years ago, among a hatch of coral lilies grown from seed collected in Siberia, there appeared a plant of a tall and robust form of *L. concolor*. With the pollen of this lily I fertilized some flowers of the typical *L. concolor*, which only grows about half the height and flowers about a month later. The result is a race of strong, sturdy and thoroughly hardy lilies having upright

flowers of the same sealing wax red as *L. tenuifolium* and flowering throughout July. The typical *L. concolor* is not very hardy here; it is common in western China, and has been reported from Ichang, where it grows in the company of such tender things as begonias and *primula sinensis*. *Lilium concolor* can easily be recognized by the style, which is shorter than the ovary.

Alliums

Closely allied to the lilies is a family of plants noted more for their culinary than their ornamental value. I refer to the alliums. Still among the wild onions are several hardy bulbs of considerable ornamental value. Besides our native pink-flowered variety, there is a species with deep sky-blue flowers from Siberia called *Allium azureum* that flowered for the first time with me last summer and gives promise of being a welcome addition to our list of hardy bulbs.

A Hardy Narcissus

Another bulbous plant which gives promise of being hardy is a species of narcissus, closely related to *N. poeticus*, which I received from Swiss Alps. These bulbs reached me four years ago, too late to plant outside, so I grew them in the house the first winter. This weakened them rather badly, and quite a few succumbed. Those that survived were planted out, and though they have been given no protection, have gradually recovered. In 1923 a few of them flowered and last year practically every bulb produced a flower stem, many of them having two flowers on each stem. The behavior of these plants leads me to believe that it is merely a matter of time until we have a race of really hardy narcissus.

Polmonium

One of the finest of early flowering plants last year was *Polmonium melitum*, a native of Colorado. This is quite distinct from other species of *polmonium*. The pure white flowers, which are shaped somewhat like a freesia, are strongly honey-scented, and while it flowers very freely

throughout June, usually produces a few flowers again in autumn.

A Siberian Honeysuckle

Among the new shrubs there is a bush honeysuckle that makes a very striking garden ornament in June. This is *Lonicera Maaki*, a native of eastern Siberia. The branches assume a horizontal position, and the leaves hang down, giving the pure white flowers (which appear at the axils of the leaves) the appearance of so many white butterflies perched on the branches. There is a variety of this, much talked of, in the United States—*Lonicera Maaki* var. *podor carpa*—but as it is a native of central and western China, it is not likely it will prove hardy here.

Salt Bush

Another uncommon shrub is the salt bush of southern Russia and western Siberia (*Halimodendron argenteum*). This is a pea shrub, with leaves shaped like those of *Caragana grandiflora*, but covered with fine hair, which gives them a silvery appearance. The flowers, produced in July, are pale rose in color and quite fragrant. They blend so well with the foliage, however, that they become inconspicuous at a distance.

Lilac From Korea

A lilac that is likely to occupy a prominent place in our gardens in the future is the Korean *Syringa velutina*. The flowers in the bud state are pale pink and have the airy grace of a spirea. When they are open they are white, and have a peculiar haunting fragrance which makes one want to visit them again and again. The fact that this lilac, which was grown from seed collected on the Diamond Mountains of Korea, near latitude 38, has so far proved hardy, and a number of other Korean trees and shrubs (which I have on trial) are so promising as to hardiness, leads me to believe that a number of other fine trees and shrubs from the northern part of that country will also prove hardy and valuable here. I may remark here that the flora of Korea is closely related to that of Japan, but, in my experience, is a great deal harder.

A Clematis from Korea

A few years ago I had the pleasure of introducing *Clematis tangutica* through this society. This year a new clematis from Korea—*C. korena*—flowered for the first time, and resembles

C. tangutica quite a bit. The flowers of *C. korena* are paler in color than *C. tangutica* and open flat, while those of the latter are somewhat bell-shaped. *C. korena* is also later in flowering, the last flowers of *C. tangutica* having faded before the first of *C. korena* had opened.

Improving Our Roses

It is quite a number of years since I first tried to improve our roses by crossing them with other varieties, and this work is now beginning to show some results. Quite a number of my seedlings flowered for the first time during the past summer, and while one would require a far more vivid imagination than I possess to contend that some of them are improvements on either parent, still a few seem to be a decided step in the right direction. Two of these—seedlings of *Rosa blanda*, and apparently of the same pollen parentage—have quite double cup-shaped flowers of deep rose color and produced in great profusion. This variety will, I think, compare favorably with any other really hardy rose of its color.

One of my first crosses—*Rosa rugosa* by *Rosa acicularis*—when crossed again by some of the double roses, has given some rather promising seedlings. Three of these very much resemble each other and have large double flowers about three to four inches in diameter, of a clear salmon color, and with a spicy fragrance. They have been growing in a very exposed position for three years and have shown no sign of winter injury so far. Quite a number of hybrids of *Rosa spinosissima* flowered this year for the first time. A curious fact about these crosses is that all the seedlings have the small, neat and healthy foliage of *Rosa spinosissima*, no matter whether *R. spinosissima* was the seed or pollen parent; most of them are also very sweet scented.

Two hybrids having dwarf polyantha roses as pollen parents, have done well at Ottawa, but have not proved quite hardy here. One of these is of the same parentage as the Grootendorst rose, but is paler in color; this variety kills to within a foot of the ground with me, but usually flowers well. The other has small, pale pink flowers, produced in great profusion, but is rather more tender here, and I would scarcely care to recommend it for Manitoba.

GROWING DELPHINIUMS

L. T. CHADWICK, St. Vital.

The Delphinium is the one flower we cannot do without in Western Canada. You might do without Iris—you could be very foolish, but you might—because your Darwin Tulips are just going out of bloom and your Peonies will soon be in flower. You might do without Gladiolus because you prefer Dahlias. But if you do without Delphiniums, yours will not be a real garden during the month of July. There is no adequate substitute. I grow quite a variety of different kinds of flowers, and have a large number of visitors in the garden each summer, and the Delphiniums attract more general attention than all the rest combined; this in spite of the fact that they receive far less care in their cultivation than almost anything else as, apart from necessary staking, they practically fend for themselves.

Color and Size

What chiefly attracts is their color and size. Blue in varying shades appeals to most people because it is a restful color, and, in combination with green, we are unconsciously accustomed to it.

Our sky is usually blue, and when it varies it is grey-blue or blue flushed with rose, violet, mauve or pink, and these are exactly the variations one finds in the Delphinium blues. There are some colors that, unless taken in small doses, tend to be irritating rather than soothing. The brilliant scarlet of some of the salvias, for instance, is all right in its place, but, like the bagpipes, it is better in the distance. I can hardly imagine a garden full of red flowers, but blue with its near shades is quite acceptable, although I must acknowledge much the better for a splash of brilliant contrasting color here and there. The majesty of a well grown clump of Delphiniums attracts everybody.

Some of them, under certain conditions, will attain a height of eight feet and carry as many as thirty or forty flowering spikes, each spike of flower from two to three feet in length, and when grown, as Delphiniums should be, in clumps of a dozen or more together, it is no wonder that everybody

who sees them wants some in their garden.

Reliable

Delphiniums are absolutely hardy, and, once established, they are good for several years, if the ground has been reasonably prepared. They will bloom twice a year if cut down to the ground after the first flowering, and, in my experience, have only one enemy and only suffer from one disease.

Cutworms

The enemy in question is not peculiar to the Delphiniums, but, when given the opportunity, he seems to prefer the Delphiniums to anything else. However, you all know remedies for exterminating the cutworm, so we won't think about him any more; but, as a great friend of mine says, with deep feeling, "the little devils do love Delphins".

Mildew

The disease is mildew. Some varieties are undoubtedly more subject to it than others, but in some seasons most of them seem liable to be attacked. I don't know of any practical remedies, effective spraying being out of the question when grown in masses as they should be, and of doubtful value even if it could be done.

I have watched the plants carefully for a number of years, and it seems to me that mildew is worst in very dry seasons, and I would suggest to those who have water available, that periodical soakings would go a long way to alleviate the trouble. If this cannot be done, and the plants become unsightly, it is better to sacrifice the first bloom by cutting them down—the root will not be harmed and the disease will not necessarily appear again on the same plant unless the plant is inherently subject to mildew or you omit to burn the cut down foliage. In this connection, I might say that I have stopped growing Delphiniums of the Belladonna type on this account. They are very desirable if they can be well grown, but I have no water and the continual disappointment has been too much for me; so last year they were all dug up and burned.

Soil

Delphiniums demand good farc, deeply dug well mellowed ground with plenty of humus. The stem is hollow, which is a clear indication that they require quantities of water, and, apart from growing them in wet, badly drained ground, I don't think they can get too much.

Transplanting

They are best transplanted in the spring, being very free and vigorous rooting plants. Transplanting is naturally quite a shock to the root system, and when this is done in the fall, just at the time they are ceasing their active growth for the year, they do not always establish themselves before the winter, and this is, without doubt, the cause of a large number of casualties. In the spring the new root system is vigorous, and, if given liberal supplies of water, it is a very simple operation. Last year some of my two-year-old plants were moved into other gardens, when the new growth was eighteen to twenty-four inches high, without a leaf wilting, but each one got two or three buckets of water at once, and it is needless to say they were not out of the ground very long.

Seedlings or Named Sorts

In Western Canada we have to practically depend on seedlings as, although there are innumerable named varieties in England and France, they are most difficult to import; however, although the majority of seedlings may not be quite as good as the best named kinds, they certainly make up for any deficiencies in vigor and health, and when seed is obtained from named kinds the big majority come fairly true in most respects.

I am not saying that Delphinium strains are all fixed and breed true from seed, because they do not, most of them being hybrids, but I will tell you what I have observed, although it may be only fancy and worth nothing. The bees do most of the fertilizing, and they seem to be very conservative and, in each flight at least, seem to rigidly stick not only to one class of flower, but to one color in that flower and appear to exhaust one whole spike of a Delphinium before proceeding to the next. This means practically that the majority of the stigmas are self fer-

tilized, and as this has been going on probably for several generations, the dominant qualities which are shown in the parent will, in the majority of seedlings, govern. Of course, these links can very easily be broken, but it seems reasonable to assume that natural fertilization works on the lines of least resistance; this explains the improvement (or shall I say change) in so many flowers when taken in hand by the hybridist who breaks up natural linkages and gets new combinations.

Propagation

Raising new plants from seed is quite simple so long as the seed is reasonably fresh. It is possible to sow seed immediately it is gathered—it need not even be fully matured—and get seedlings sufficiently far advanced to withstand the winter. The usual way, however, is to sow in flats in the spring with gentle heat if possible and transplant as soon as the ground is reasonably warm. By this method flowers may be had the same season, only one spike of course, but sufficient to prove the flower, or, if it is your own seed, and you do not wish to carry it over the winter, it may be sown in the fall, too late for it to germinate that year, and practically every seed will come up in the spring. Two other ways of increase are by division of an old clump and cuttings. Divisions can be made quite small if a big supply is required, but it is necessary to have roots attached to each crown piece and also advisable to give them pot frame treatment until new growth is established. This can be done immediately after just flowering in July and there is ample time to have them well established before winter.

Cuttings are rather more difficult. The stem is hollow, so the usual mode of cutting is of no use; but each one must have a heel, i.e., a bit of the old crown attached. These have to be nursed until growing freely, but, as cuttings are best taken in the spring, soon after active growth commences, there is plenty of time to get good plants before winter.

Variety in Bloom

The flowers themselves vary considerably, both in form and color, and there is great variety in the habit of different plants. The flowers come

single, semi-double and very occasionally fully double. The semi-double are by far the most popular, although I acknowledge a weakness for singles for border decoration. The full doubles are only in their infancy and it is a question whether they will ever be of much account for the garden and, after all, a Delphinium is a garden plant, not a show plant.

Colors vary from the deepest blue through intermediate blues, pale blue, mauve, pink to white, or through violets and purples of every tone, the eye being white, brown or black or even absent altogether in rare cases. The white Delphiniums are not yet strictly a success, those of the large hybrid type are usually more creamy yellow than white and rather dull, while the pure whites are usually of the Belladonna type and tend to become a washy blue towards the end of their season or during wet weather.

The form of the flower spike is important; there are far too many with closely packed flowers clinging tightly to the stem and with blunted apex, very much resembling a gigantic Dutch Hyacinth and rather apoplectic. The more ideal form is spire like, each pip being carried on a long pedicle which throws it away from the spike, the whole flower tapering up to a point. Many side branches from the main stem are not desirable; they prolong the first blooming season in a rather unsatisfactory way, but certainly jeopardise the second and certainly take away from the towering effect of the ideal Delphinium.

I have heard it argued that the blunt

ended and tapering ended are two distinct types, but hardly think this is the case. What has really happened is that hybridizers have been too hasty in obtaining size and have often done so at the expense of grade. Who does not know the big Iris without substance that flops soon after it has opened or the enormous Dahlia that wilts within a short time of being cut. These are mistakes that should never have been introduced.

In addition to the tall large flowering type, there is the Belladonna type which is not so tall, but more freely branched and more perpetual flowering and, therefore, suitable for cutting, and the dwarf Chinensis type which are best treated as annuals, although they are true perennials.

It is interesting to note that these various types can be segregated from a mixed bunch of seedlings as soon as the true leaves appear. The dwarf kinds have very finely cut foliage, the Belladonna being intermediate in type, whereas the tall hybrids have much more massive leaves not all alike.

I can whole-heartedly recommend the Delphinium as a garden flower, but don't pick out the big dull colored ones; they may be very fascinating on close inspection, but give very poor results in the garden.

Number of Spikes

If you want to get the very best results, break out all but six or seven of the growths in the spring, but, personally, if my plants show a tendency to throw up thirty spikes I shall give them a little more food and try and make it thirty-five.

GROWING LETTUCE SEED IN MANITOBA

By J. F. HIGHAM, Fort Garry

Possibly the greatest need of the gardener is seed suited to the locality in which he lives. In Manitoba the grower is almost wholly dependent upon foreign sources for his yearly seed requirements, but, by careful selection of varieties that do well at the present time, it is possible to obtain varieties more adapted to local climatic conditions than is the case today.

The writer's personal efforts have

been directed towards the production of lettuce seed. Starting in 1921, the first two years were unsuccessful, but in 1923 a good quantity of seed was obtained, and again in 1924, in spite of an adverse season, a crop of seed was secured.

So far, the following varieties of head lettuce have been tried: All Year Round Butterhead; Big Boston; Long Standing Iceberg; Early Ice; Toronto

Gem. The following varieties have been observed at Manitoba Agricultural College: Dreer's All Heart; Sutton's Heart Well; Brittle Ice; Hanson; Crisp as Ice; Ieberg.

Some Good Varieties

Grand Rapids, a leaf lettuce, will ripen an abundance of good seed. This type is only valuable as a foreign lettuce, and selection of strains will have to be made from the standpoint of quick growth at low temperatures, the object being reduction of heating costs at forcing time.

Of the heading types, All Year Round Butterhead has shown up best, being a good heat-resister, quick growing, and of medium size, giving a higher percentage of perfect heads than any other type so far grown. It ripens seed in September if set out early in May.

Dreer's All Heart looks like a good type for Manitoba, and Sutton's Heart Well appears to be better, but every season has so far shown that All Year Round Butterhead will produce a far larger percentage of perfect heads than any other and will mature a good crop of seed even under adverse conditions. Possibly Sutton's and Dreer's All Heart, by careful culture, will produce seed. Once seed is obtained, it should be possible to improve these promising varieties.

Caring for the Plants

Roguing is done when the hearts begin to form. All off-type heads and any plants showing signs of disease

are destroyed. To give room for full development, the best heads are saved, allowing three feet between plants both ways. Good heads removed to give this spacing can be sold or used at home.

As soon as the heads show a tendency to bolt, all the outer leaves are removed. This prevents lettuce drop and grey-mold from spreading under the damp, old leaves. If this is not done, many plants will be rotted off at the ground line. Hoeing around the stripped plants prevents the fungi causing drop and mold from spreading from plant to plant. The sunlight, also, hardens the stem and hastens maturity.

Early in August flower buds begin to swell and soon the plants come into bloom. Blooming reaches its maximum about the third week in August and continues until frost kills back the plants. An abundance of seed is produced, and the only practical way to save this seed is to hand-pick it daily; otherwise high winds will blow the ripe seed away. Cutting and standing on end does not seem to be practical in Manitoba. The seed should be placed in shallow pans in the sunlight and never allowed to become wet. The strong sun hardens the seed, kills molds and dries the seed to perfection.

Any readers of this article wishing to ask questions relating to seed production are welcome to whatever information I have, my address being J. F. Higham, 1120 Edderton Ave., Fort Garry, Man.

ESSENTIALS FOR SUCCESS WITH DAHLIAS

By Dr B. S. BAILEY, Winnipeg

The dahlia, of course, requires no introduction. It is one of those flowers that has graced the gardens of peoples in the temperate zone since the days of our great-grandparents. Like many other fine flowers, it had a very humble beginning, the original of the family being a small, unattractive wild flower of Mexico. It appeared as a single. Many elaborate forms have been developed by improved cultivation and by a careful selection of those seedlings which showed a tendency to break away from the original specimens.

So remarkable has been the improve-

ment in bloom during the last few years that one might say that there are dahlias and dahlias, the dahlias of yesterday and the dahlias of today.

The dahlia of yesterday or, to be more explicit, the dahlia of the past decade, has still a place in our garden today. Owing to its healthy, vigorous constitution, its freedom of bloom and its reliability, its decorative value is indeed great. However, if it were only this type that we wish to grow, any extended remarks would be unnecessary as it seems to thrive under almost any conditions.

The dahlia of today, unfortunately, presents another story; but it possesses such a great improvement, in size and form of bloom, in range of color, in stem and (at times) in habit of growth, that flower-lovers everywhere are trying to grow it with the same facility, and very often the result is disappointing.

Unfortunate Experiences Sometimes

We frequently have it called to our attention that certain Californian varieties of note are a failure in the eastern states, and the reverse also holds true—that many of the most famous New Jersey creations are a great disappointment in California. In our own province we have had unfortunate experiences with dahlias from several sections, and any of you who are conversant with the facts must have noticed the very few commercial growers there are in all the middle states; and any that there are list only the older varieties which have proven to be dependable growers. This is the district where peonies, iris and gladioli abound.

Well, what does all this mean? It means that the dahlia of today is not as reliable as the dahlia of yesterday. Whether it is suffering a little from an overdose at the hands of the plant-breeder or whether the weakness is caused by too rapid propagation, it teaches us that we must not be too optimistic when we place beneath the soil a 5, 10, or 25 dollar tuber of one of the newest world's wonders. We must not wager too much on the quantity or the quality of the bloom we will receive.

Soil and Climate Preferences

Now, with regard to the culture of the dahlia, I am going to suggest that we take into consideration one or two points which we usually overlook, viz.: Where does it come from and what are the growing conditions under which it has been developed and which induce it to give typical bloom?

The outstanding dahlias of today come from the state of California and the Atlantic states, especially New Jersey. These are, you will observe, both maritime states; they are both in the same degree of latitude; they are both famous for their summer resorts, for their equable climate, for the moist atmosphere, and for cool nights.

I will read you a few notes I have received from growers in these districts which will, in a measure, explain the growing conditions which apparently dahlias enjoy.

From southern California a grower says: "My soil is a good sandy loam, 2 to 4 feet deep. We do not depend upon rains, but irrigate in trenches. Sun shines all the year round, here. Begin planting in March, bloom from May till November."

Another, from the same district, says: "We have a good clay loam, very deep, absolutely level, well drained. Irrigate, of course, but they don't need much till blooming time. Think the sea breezes have a very refreshing effect on the bloom."

From northern California: "Good clay loam; have never got to the bottom of it yet. Do not need to water dahlias till blooming period. We depend upon cultivation. Lots of sunshine, but often fog at nights."

Another says: "We have a good rich loam; drainage A.1. We are in a valley, or I should say on the side of it. Lots of sun, cool nights, and some fog. Only water the seedlings and the show garden during the growing season as we must get typical bloom from them."

From New Jersey: "Our garden is a sandy loam, very deep, and, of course, the drainage is ideal. Water in trenches between the rows. Seedlings and novelties receive special care. I think our moist atmosphere develops color in bloom that is not surpassed anywhere."

From Long Island: "The soil in this district is light and well drained, making it especially adapted to dahlia growing. We do not water till the bloom comes on; then use an overhead system. Sunshine is important, and we have lots of it; usually rains in abundance, and the nights are cool, with some mist from the Atlantic."

From these remarks I would gather that the essentials are: A deep, well-drained soil, light rather than heavy, sunshine in abundance, plenty of water during the blooming season, while a moist atmosphere and cool nights would be very desirable.

Cultural Directions

And now to add a few details, I would say that, to give the dahlia of today every opportunity to make good,

we should proceed somewhat after the following manner:

Location.—Out in the open, away from trees and shrubs.

Time.—About June 1, or when the soil is really warm.

Soil.—Dig deeply (2 feet, anyway); add drainage to the subsoil if necessary; the top foot of soil to be broken up very fine.

Depth.—The tuber to be placed 4 or 5 inches below the surface, flat or slightly tilted, the crown end nearer the surface and the eye facing upward.

Stake.—A good stout stake driven into place at time of planting and within two inches of the eye of the tuber.

Stalks.—Only one or, at the most, two, should be allowed to grow from a tuber; cut away the others below the surface.

Cultivation.—Should be continuous, deep at first but shallower as the buds appear, and during the blooming season just sufficient to keep the surface loose.

Water.—As little as is needed to keep the plant growing until buds arrive; then as much as the soil will stand.

Insects.—Spray the foliage once a week with a sharp spray of water. Cut away any dead foliage and, when necessary, use a mixture of Black Leaf 40 and whale oil soap. Another good insecticide is Clensel, used as directed on the container.

Pinching.—It is good practice to pinch out the centre of the plant when three pairs of leaves have formed. This makes the growth more dwarf and more self-supporting; it delays the bloom for a week or more on most varieties, and so it would not be wise to try it in a very backward growing season such as the one we had last summer.

Pruning.—Cut away all old foliage. Also if the plant becomes too bushy, thin it out by removing a few of the branches. Too much pruning means new growth from the crown, and the condition would soon be worse than ever; so, after pruning, keep your eye on the ground.

Disbudding.—The flower buds form in threes. Remove the two lateral ones and a longer stem and a more perfect flower may be obtained.

Fertilizing.—If the soil is good, none is needed. Improved bloom may be

secured by mixing a handful of bone-meal in the surface soil at planting time. I am advised that the proper proportions of a dahlia fertilizer for our clay soil would be—nitrogen 4, potash 6, phosphates 10.

Cut Bloom.—Late in the evening or early in the morning.

Digging.—Within a few days after the first killing frost.

Storing.—Any way that has been satisfactory for you, or place the tubers upside down in paper-lined boxes and store in a room where the temperature can be kept as constant as possible and as near 40-45 degrees as can be.

Varieties.—The following have been satisfactory growers and the bloom very attractive:

Exhibition

Bonnie Brae
Insulinde
J. W. Daves
Mariposa
Mephistopheles
Mrs. I. de Warner
Shadow's Lavender
Queen Zenobia
Paul Michael

Garden

Mrs. C. Salbach
The Claremont
Dr. Tevis
Dardanella
Red Cross
Geo. Walters
The U.S.A.
Pride of California
Gorgeous

"The gardener's work is one of worth,
He's partner with the sky and earth;
He's partner with the sun and rain,
And no man loses by his gain."

"The love of flowers is a sentiment common alike to the great and to the little, to the old and to the young; to the learned and the ignorant; the illustrious and the obscure. While the simplest child may take delight in them, they may also prove a recreation to the most profound philosopher."

PERENNIAL FLOWERS

By M. J. TINLINE, Superintendent Experimental Farm, Brandon

This subject is perennial in more senses of the word than one. A perusal of the records of any of our horticultural societies would show that this subject has been discussed at frequent intervals. No doubt largely due to these discussions, we find some splendid flower gardens scattered here and there over the Province, but too frequently we find homes with a few dwarfed annuals or no flowers at all.

There are several reasons for this condition of affairs:

1. The summer is short, and much has to be done, so this phase of gardening is neglected.
2. Knowledge of how to cheaply obtain a garden of flowers is lacking.
3. Lack of fences to keep stock out.
4. Discouragement due to previous failures.

Flowers Important in Home Life

In few cases is the failure to have flowers due to lack of appreciation of flowers. The number of people who have no flowers, but who enjoy them whenever the opportunity arises, is surprising.

The need for flowers is great here on the prairies. With our wide sweep of plains, we lack the hills, the streams, and lofty trees, and we lose something out of life. In some measure we can regain this when we improve our surroundings, when we realize the beauty that is in our summer sunsets, and when we claim the beauty of fair flowers for our own.

Flowers on the farm will bind the family together, keep their interest in the farm and raise the standard of the home in reality, as well as in the opinion of those who pass by. This was brought home to me by a story I read the other day of a boy who undertook to sell some vegetables that he had grown in his garden. When he came back he said he had a good time and that he had found out how to tell the people to call on. Wherever there were flowers in the window, he was invited in and asked to warm himself; but where the windows were bare he did little or no business.

Place to Plant

It is scarcely necessary for me to dwell on the fact that the perennial flowers fit into the average farm conditions better than do the annuals. Once planted, they require less labor, since they will continue to produce flowers for an indefinite term of years. They usually root deeper; and thus they are not so easily affected by a period of drought. Where some annual flowers can be grown, the perennials supply a splendid foundation around which to build the less dependable annuals, thus furnishing a greater variety than is possible with either kind alone.

One of the first considerations is location. Three choices are often possible. First in rows in the vegetable garden, for the production of cut flowers and for improving the appearance of the vegetable garden. A decided advantage in having them in the garden is that the one fence is all that is necessary to keep out the poultry and stock.

A second location is around the edge of the fence or along the borders of the walks or to make a connecting link between the lawn and shrubbery or house. When the plants are spread out in this way, they will require more care than when in a compact group or in rows. They may, however, greatly improve the appearance of the grounds if scattered around; and a lesser number of plants can be used effectively, depending of course on the extent of the grounds.

A third arrangement, and one that will probably prove the most effective on farms where labour is difficult to obtain, is to have a flower border located between the house and the main road, so that the people in the home and passers-by can enjoy its beauty.

Making A Start

Where there is skilled assistance and a long pocketbook, wonderful progress can be made in one year; but where the gardener has only a little time to spend daily in the garden, and the

pennies have to be counted, then the best plan is to take sufficient time to make a good start.

For the cost of one single perennial flowering plant, a packet of seed can be obtained that can be made to grow into dozens of plants. Many of the perennial flowers will bloom the second year after sowing the seed. For the best results in growing perennial flowers, it is advisable to put a shallow frame around a small seed bed. The frame need only be one board high of 1"x6". Usually about 4 feet across the bed is best, and it may be as long as is necessary for each row to be 4 feet long and the rows 6 inches apart. The seed can be sown in the autumn and covered with only sufficient soil to keep the lighter and smaller seeds from blowing away, the larger seeds being covered to a greater depth. At the beginning of the second season quite a number of plants are available. This

instances, something else than the original type is obtained. With such flowers as Columbines and Delphiniums this is not so important when only a few clumps of each are grown. These hybrids are frequently very beautiful and vary greatly in appearance.

What To Grow

In determining the kind of flowers to grow the factors to be considered might be enumerated as follows: hardness, time of flowering, color, height of plants and the value as cut flowers or as ornamentals in the garden.

The following list has been compiled from recommendations made by the Experimental Stations at Lacombe, Alta., and Scott, Sask. Flowers that thrive well at these two northern stations should prove hardy in Manitoba. Flowers included in this list can be grown from seed:

Kind—	Height inches	Date commencing to bloom
Achillea—The Pearl	18 to 24	July 5
Aquilegia—Columbine	20 inches	June 6
Aconitum Napellus—Monk's Hood	30 inches	July 26
Delphinium—Larkspur	24 to 60	June 26
Dianthus deltoides—Maiden Pink	5 inches	June 20
Dictamnus fraxinella—Gas Plant	19 inches	July 3
Gypsophila paniculata—Baby's Breath.....	30 inches	July 17
Gaillardia—Blanket flower	24 inches	July 3
Hesperis matronalis—Sweet Rocket	30 inches	July 1
Lychnis—Jerusalem Cross	32 inches	July 4
Papaver orientale—Oriental Poppy	24 inches	July 7
Papaver nudicaule—Iceland Poppy	12 to 16	May 27
Polemonium richardsonii—Jacob's Ladder.....	16 inches	July 7
Pyrenthrum roseum	22 inches	June 25
Phlox Subulata		

system of growing plants is economical, and it gives the gardener sufficient plants so that clumps of the different kinds can be planted and for good sized grounds the clumps of flowers are often more effective than when individual plants are used.

The gardener who requires only a few plants of each variety can, however, obtain a start much easier by obtaining plants of named varieties from the nurseries. Where a number of old perennial plants are available, either from an obliging neighbor or elsewhere, dividing these into several plants will aid greatly in obtaining a good start. This will ensure varieties true to the type of the old plant, whereas when seed is sown, in most

Flowers Grown From Roots, Bulbs or Tubers

Flowers coming in this class are more expensive to start than those in the preceding class, but are of great help in keeping a supply of flowers for the entire season. The early flowering tulips are of particular value in supplying flowers for a difficult period. A flower border would scarcely be complete without a few Paeonies and a few clumps of Iris. These should be selected with a view to having a variety of color and lengthening the flowering season.

Thirty years ago the Superintendents of the Experimental Farms at Indian Head and Brandon were reporting

many of the varieties in the preceding list to be hardy and worthy of trial. This information has been available for years, but the number of people who have flower borders are comparatively few. How are we to persuade more gardeners to become interested and establish flowers of a fairly permanent nature in their

grounds? One way, and I believe the most certain method, would be for each grower of perennial flowers affiliated with this Association to undertake to save seed and send small packets to their neighbors with the suggestion that the neighbor grow them and help to carry on the good work by passing on seed when their opportunity arrives.

ROSES FOR MANITOBA

By GEO. F. SYKES, Brandon.

Every householder who is interested in growing flowers is a potential rose grower, because there is no one flower capable of being grown in a temperate climate which can equal the rose in variety of form, color and perfume, and which is also so effective in landscape gardening. Sooner or later each one will try his hand at growing this queen of flowers, for where can be found more picturesque and delightful scenes than the small homes radiant with clusters of climbing roses perfuming the surrounding air, such as are to be found in all parts of the old land and in some parts of the new?

Although we in Manitoba cannot hope to bring into being such a glorious picture in the present day in this climate, yet a proper exploration into the mysteries of rose hybridization has as great a chance of successfully producing perfectly hardy climbing roses of good quality—and exhibition blooms also—as had the hybridizers of the apple, who have already made such great strides towards success.

Hardiness

Already we have numbers of wild species of all colors, both bush and semi-climbing or pillar type of roses which are found to be entirely hardy in this climate; and many of their hybrids are equally hardy. However, we are faced with the indisputable fact that, barring individual exceptions to the rule, we have no quite hardy hybrid remontant, hybrid tea or other exhibition type of rose in the present day, but we have many hardy decorative roses out of which we may, if we will, develop the higher type of flower in the future.

Many of us have spent our energies and pocket money in finding out rose secrets, and it is only proper that we

should pass on our experience, although it may have been only a series of failures. This will explain my object in addressing you this evening, although the outcome of some of my experiments will remain in doubt until next spring, and therefore cannot be given on this occasion; so that I have had to obtain a large amount of my data from such authorities as Mr. H. H. Thomas, F.R.H.S., an eminent English authority, Mr. Geo. C. Thomas, Junior, author of "Roses for all American Climates," and Mr. J. Horace McFarland, Editor of The American Rose Annual.

As hardiness is the paramount question, there are only two classes of roses which are of interest to us in Manitoba: those that are root and top hardy without protection when once established, and those that are root hardy but only top hardy with protection.

I am making a plea to-night for a more extensive growing of the former class, usually referred to as "decoratives" by reason of their usefulness in landscape work.

There are a number of species of wild roses of other lands which have received considerable attention from hybridists and from the cross pollination of which many hybrids of excellence have been originated, chief of which are *Rosa Lutea*, and *Rosa Rugosa*, the Austrian and Japanese wild roses.

List of Top Hardy Roses

The following list of the species, subspecies and hybrids of these two may be reasonably relied upon to prove top hardy without protection and will furnish roses of all colors, both single and double, some delightfully fragrant, which would be an acquisition to any

garden of sufficient size to accommodate them. A third species, *Rosa Hugonis*, from Western China, is now claiming attention; and, owing to its hardiness, size of bloom and rich colour it promises to furnish many more decoratives suitable for planting in Manitoba; and there are numerous other perfectly hardy species from which to choose parentage for the hybrids yet to be created, one of which is found growing even within the Arctic circle.

With a garden of these decoratives once established, there is opened up to the amateur rose grower a delightful opportunity to try his hand at hybridizing, and he may perhaps be fortunate enough to produce some specimens of worth which may win for him such enduring fame as has been accorded to the late Doctor Van Fleet:

Austrian Roses

Name	Color	Form
Rosa Lutea	Deep Yellow	s.
Austrian Yellow	Bright Yellow	s.
Austrian Copper	Red-Yellow bicolor	s.
Persian Yellow	Clear Yellow	d.
Harrison's Yellow	Clear Yellow	d.
Jaune Bicolor	Red-Yellow bicolor	s.

Japanese Rugosa Roses

Name	Color	Form
Rugosa Alba	White	s.
Rugosa Rubra	Red	s.
Rugosa Repens Rosea	Rose	s.
Agnes	Pale yellow-salmon	d. — F.
Agnes Emily Carman	Bright Crimson	d. — F.
Atropurpurea	Black-Crimson maroon	d.
Alice Aldrich	Clear light pink	d.
Belle Poitevine	Rose-magenta pink	d.
Blanc double de Coubert	White	s. — F.
Enchantress	Velvety Crimson	d.
E. J. Grootendorst	Red Crimson clusters	d.
Pink Grootendorst	Pink	d.
Hansa	Reddish Purple	d.
Parfum de L'Haye	Dark Carmine-Crimson	d. — F.
Rosaire de L'Haye	Dark Red	d. — F.

Root Hardy Roses

Of the second class, or root hardy roses needing protection, there are the hybrid remontants and hybrid teas to be considered and possibly some others. One often concerns oneself needlessly with the degree of hardiness of this or that variety. I use the word "needlessly" because if any particular rose is not entirely top hardy it must receive the same protection no matter what its degree of hardiness may be;

and that protection must ensure the exclusion of air during the freezing period. If the ripened wood of a rose were gradually frozen and could be kept in that state all winter it would suffer much less harm than if intermittently subjected to thawing and sunshine; and one of the difficulties experienced is to know the proper moment to furnish this protection.

Winter Protection

Where this class of rose is grown in nursery row, the simplest way is to plow between the rows and hill and pack them as you would celery. In the case of an individual plant, tie up, place a nail keg or box around it and fill and pack with earth. I am using galvanized pipes made tapered for

economy of space in storing. If the stems or branches exposed above the earth packing are not winter killed, it will be fairly safe next year to just hill up with the hoe. Any covering that will prevent intermittent thawing will prove beneficial.

If you have a root house, you may even grow some of the tenderer hybrid tea and pernetiana roses and dig them up and pack them away for the winter, but, as I said before, the grow-

ing of hardy decoratives is of greatest importance at the present stage of development, and will be found to be the most successful.

Do not place too much dependence upon whether a certain rose is classed as a hybrid perpetual, hybrid tea or other standard class, for, except in some of the more elementary crosses, few of the modern hybrids can be traced back to their origin, and experts differ as to proper classification, generally basing their decision on the type of growth of the hybrid; thus the same rose may often be found listed in different classes.

While on the whole hybrid perpetuals or remontants are hardier than hybrid teas, there are no new introductions in that class, and there are only a few of its varieties which are not excelled by hybrid teas and pernetianas.

Most roses, other than hardy species and sub-species, are offered for sale low budded on one or other of the hardy root stocks, and these are much more hardy and vigorous in their growth, and are also more floriferous, than those propagated on their own roots.

Fall Delivery vs. Spring Delivery

My personal experience leads me to recommend the purchase of field grown hardy roses for fall delivery and the burying of the plants for the winter, in preference to spring delivery.

Prepare a trench of a width equal to or greater than the height of the roses, with a sloping bottom 18 inches deep on one side and about a foot on the other. Place the roses across the trench, roots at the lower side, and carefully pack in and cover over well with soil and top off with a mulch of leaves or straw. Before covering them, make a sketch showing the location of each variety in the trench.

In Spring, it being assumed that the ground has been previously prepared for planting, consult your plan and select the position for the first variety, open the end of the trench, and, without disturbing the others, remove the end rose and immediately plant it in its permanent position and proceed with the next.

By following this practice, you will gain several weeks of valuable time, as the roses will be ready to com-

mence active growth, will suffer little from the removal and will have recovered from the ill effects of transportation, and be at hand ready for planting at the first seasonable opportunity.

Soil and Location

Decorative roses form fairly large bushes, and consequently root deeply, which makes it imperative that the subsoil be well broken up by trenching to a depth of at least two feet, and plenty of rotted manure mixed with it. The ground must also be well drained. Any good loam will be found satisfactory, but a well worked clay is most suitable, as roses like a firm cool soil. After planting, throw a handful of bone meal in the hole before filling up to its final level.

Do not plant any roses in the shade of other shrubs and trees, but in the open.

Summer Care

Mulch in the hot weather to prevent a too rapid drying out of the soil, and during the growing season see that they never suffer from lack of moisture. Liquid cow manure may be freely given from the time the buds form, starting with a somewhat weak solution.

Unlike the exhibition or cutting roses, Decoratives require no pruning other than the removal of dead wood, except at the time of planting, when the tops should be cut back to balance the disturbance and pruning of the roots.

I do not feel it necessary on this occasion to discuss fungous diseases and insect pests to which roses are subject, because the decoratives are least affected and particularly because this is not a discourse on the culture of roses.

Start right by growing decoratives first, and I am sure that your success will engender a desire for something better instead of leaving you disheartened and disgusted with your experience, and you will also have gained valuable experience to aid you in your further researches.

As a guide to rose growing in Manitoba I know of no better publication than Mr. Thomas' book "Roses for all American Climates," and I strongly recommend it to all intending growers.

VEGETABLE CROP IMPROVEMENT AT THE CENTRAL EXPERIMENTAL FARM

By T. F. RITCHIE, Vegetable Specialist, C.E.F., Ottawa.

It is well over thirty years ago since the first Dominion Experimental Farm was established at Ottawa. The same farm today is known as the Central Experimental Farm and embraces work along every line of agriculture. It was at this farm that the first horticultural work of any great importance was inaugurated in Canada, and especially to benefit the whole Dominion. From the original Division of Horticulture of those days, with a very scant staff, there has developed the present day well organized division embracing Vegetable Gardening, Pomology and Ornamental Gardening.

Very soon after the establishment of the Experimental Farm it was realized that a vast country like this would require a great diversity of crops to meet the varying demands of the various localities. To this end, a start was made to discover by actual tests how well the then accepted standard sorts would do under these conditions.

Tomato Improvement

The first crop to be brought under improvement was tomatoes, because it was found that an early variety was needed for the short seasons experienced in a very large part of this country. The "Alacrité," a name given to a strain of tomatoes by Mr. T. W. Macoun, now Dominion Horticulturist, has won a widespread reputation as an early cropping variety in the cooler sections of Canada. In fact, it has been a blessing to many, as shown by reports received from people that have tried other varieties and failed with them, whereas Alacrité, under similar conditions, has yielded a crop of ripe fruit.

The Alacrité tomato very closely resembles the parent Earliana in type of plant, form of fruit and also in colour; but it is considerably earlier. This variety requires around 100 days from sowing the seed until the first ripe fruit is harvested, whereas Earliana requires around 104 to 110 days. From a money standpoint, a good early variety may mean considerable to a grower in being able to

obtain a high price for the first tomatoes offered on the market. A field of uniform plants yielding one, two or even three pounds of early ripe fruit per plant, marketed while the price is high, may make a satisfactory profit from the crop, with the major part of the crop to follow.

However, it was soon realized that further selection would not overcome some of the defects in Alacrité, and that it would be necessary to resort to cross breeding with varieties possessing the desired characters in the hope of combining these attributes and produce variations sufficient to enable segregations to be obtained that would combine the earliness of Alacrité and the smoothness or the prolific bearing habit of the other parent used. The cross breeding was carried on reciprocally, using the following varieties: Alacrité, Earlibell, Hipper and Danish Export. To the present only two of these crosses have been retained,—namely Alacrité X Earlibell and Alacrité X Hipper. Both of these hybrids are quite an improvement on the original Alacrité by way of vigour of vines, smoothness of fruit and an extension of the fruiting period later into the season. However, neither of these hybrids retained the extreme earliness of Alacrité, which is unfortunate; but despite this drawback both of these hybrids have proved quite satisfactory under trial at the Branch Experimental Farms on the prairies.

Further hybridizing has been carried on during the past four years with such varieties as Alacrité, Bonny Best, Livingston Globe and Grand Rapids; and from present indications there is every prospect of obtaining segregations which will possess the earliness of Alacrité and bear fruit resembling Bonny Best; or bear early and produce Bonny Best fruit on Livingston Globe plants. These results have already been obtained, but it will require the growing of a couple of generations yet under observation to be sure of the type being fixed before allowing these varieties out to the growers.

Early Sweet Corn

Let us now turn to another crop that is entirely different from the tomato in habit and character, that has also been under improvement in the Division of Horticulture for almost as many years as the Alacrité tomatoes, namely sweet corn. Early Malcolm, a variety of early maturing, white sweet corn, is now being grown quite extensively throughout Canada and being rapidly introduced in the United States. This variety takes its origin from a selection from Molakoff, a variety that is of Russian origin that was found to be very early, but was not well fixed as to characters. At any rate continued selection during twenty odd years has wrought such changes in the variety that if Molakoff and Early Malcolm were grown side by side, it is doubtful if any relationship marks could be observed.

Careful observations of Early Malcolm have brought out the following information concerning certain characters that have been found to hold very constant under Ottawa conditions: Number of days from planting to ready for use, 70. Average height of stalks, 66 inches. Number of rows per ear, 12. Length of ears, 6 inches.

As a basis of comparison, let Golden Bantam be taken as the standard; for no doubt this is one of the best known sorts today, and it is also considered the standard for all comparisons relating to quality. Early Malcolm compares favourably with Golden Bantam in that it is a high quality corn and also possesses the advantage of being fully ten days earlier. The following notes concerning Golden Bantam will illustrate these points: Number of days from planting to ready for use, 82 to 100, depending on the strain. Average height of plants, 84 inches. Number of rows per ear, usually 8 and in some strains 10 to 12. Length of ears, 6½ to 7 inches.

Of all the white varieties of sweet corn, Early Malcolm has the highest sugar content. Besides, it is the tenderest of all the white varieties known.

A later introduction has been the Pickaninny sweet corn, which enjoys the reputation of being the earliest sweet corn in existence. It has been tested widespread the length and breadth of Canada and proclaimed as particularly valuable in corn growing

sections as a first early variety, and in the cooler parts as the only sweet corn that will mature sufficiently to be of use as green corn. As far north as Fort Vermilion it has been successfully ripened for seed, where no other sweet corn will mature, and the same report has been received from co-operators on the Gaspé coast in Quebec, where only the native dwarf corn could be successfully grown. From still farther away than that, namely from Northern France, very favorable reports have been received concerning this corn.

Pickaninny resembles Black Mexican in colour of ripened seed, that is the seed is very dark in colour; but when the ears are ready for use as green corn there is only a slight purple tinge on the kernels, otherwise the ears are white when ready for use; but as the stage of maturity advances the kernels rapidly take on the dark colour. In quality it compares very favourably with Golden Bantam. From planting to ready for use, Pickaninny requires only 64 days; grows 40 inches in height; produces 8 rowed ears of around 4½ to 5½ inches in length.

There is still another variety of very recent origin that is as early as Pickaninny, which is the result of a cross between Howe's Alberta Flint and Pickaninny. This variety was named Banting in honour of Dr. Banting. The ears, when ready for use, are a very good yellow and range about 5½ inches in length. From present indications it will be quite popular with the seed trade and will be a great benefit to the country. Just at present there is a very small supply of seed, but every effort is being made to multiply it as fast as possible, at the same time maintaining certain standards of perfection which naturally must be fulfilled.

Rhubarb

The value of rhubarb in the garden as a permanent cash crop should not be forgotten; and this crop has come in for a fair share of improvement. For many years there were two varieties recommended as the two outstanding ones to grow, but they possessed serious defects in lacking uniformity. The two varieties referred to are Victoria and Linnaeus.

At present the "Ruby," a variety name given to four seedlings that have been found outstanding for yield,

flavour, colour and tenderness, excels all the other sorts. These four strains are known under the following numbers 1, 3, 7 and 10.

This is the tenderest, deep red-coloured variety under test, the colour permeating throughout the entire leaf-stalk, so that rhubarb sauce made from it has a delightful ruby red colour. Hence the name Ruby.

To enable people in the various parts of Canada to obtain this very promising variety, plants have been sent to the Experimental Stations in the different provinces, and it is expected that sufficient plants will be propagated to supply the demand which is bound to come. Market gardeners and home gardeners should avail themselves of this opportunity.

From a test conducted with Ruby rhubarb under forcing conditions, it was found that a very superior product was obtained. The leaf stalks were very tender and showed this red coloration in a very pronounced way. Of course, almost all rhubarb, when forced in a dark cellar or forcing house, will show a certain amount of pink, but Ruby showed this character to a greater extent. For comparison some roots of a green coloured seedling were forced, with the result that they produced an inferior product.

Various Other Crops

A number of other crops are under improvement by hybridization and selection which it is hoped will prove of great benefit to our country. It would take considerable time to deal with them, and for that reason it is thought that the mere mention of the

crops will suffice for the present: Carrots, cabbage, beans, beets, lettuce, muskmelons, onions, parsnips, peas, pumpkins and squash. This would indicate that considerable time and attention is required to keep those crops in proper shape.

Registered Seed Production

All of these productions are eligible for registration as "Foundation Stock," a line of work which may promise to be very remunerative in the near future. In "Foundation Stock" the present progeny is traceable back to one or more plants in the hands of the original breeder. No doubt, if growers would take up the growing of registered seed or registered plants and adhere to such regulations as are required, they could net a very handsome income. Foundation seed of such varieties as the Horticultural Division has been breeding and selecting can be procured in very limited quantities—and rightly so—for in no wise should a breeder attempt to produce too large a quantity, because there is danger of carelessness in connection with the plant selection in the field and general handling later on. Purity of variety and trueness of type, coupled with admitted good quality, are the objectives sought in connection with our registered seed production campaign.

The staff of the Division of Horticulture at the Central Experimental Farm, Ottawa, Ont., can be relied upon for information and assistance when troublesome problems present themselves. Should information be required, address your enquiries to the Dominion Horticulturist, Central Experimental Farm Ottawa, Ont.

HORTICULTURE IN THE PUBLIC SCHOOL GROUNDS

By C. C. MILNE, Morden.

The primary object in having a playground for public schools, no doubt, was to provide a place in which the children who attended school could profitably spend the hours, in which they were not occupied with their studies, in games and recreation.

I think we might also go a step farther than this and say that it was intended that such play or recreation should be, not merely a racing or romping around the playground, but that it should be conducted in an orderly and systematic manner, and therefore be-

come an important part of the education and training of the children.

It must be admitted by everyone that anything which tends towards the fuller and broader development of the child, be it work or play, is a most important part of the education of such child.

Here then is where horticulture enters into the public school playground; and I venture to say that there is nothing that will have a better effect on the early training of a boy or girl than to have the school grounds neatly laid out and carefully attended to.

I would not advise an elaborate or expensive laying out of such grounds nor a very expensive planting of shrubbery and flowers, but rather a plain and simple design or arrangement and the planting of a few suitable shrubs and perennial flowers, such as peonies and irises, or any others that do not require a great deal of attention during the holiday season.

I would not wish you to infer from the remarks above, that the school grounds should be neglected during the holidays, as I do not see any good reason why the school and school grounds should be closed at the end of June to be opened again about September the first, and during these two months be allowed to become a public pasture for stock, as I have frequently noticed they are.

On several occasions I have mentioned to members of the school boards and others the matter of some improvement of school grounds, and I have several times heard the remark made that it was of no use fixing up the grounds or planting shrubs or flowers as the children would only destroy them during the hours after school or during the holidays, when there were no teachers to look after them.

From my personal experience, I have no hesitation in saying that teachers

and trustees will very soon find, once they become interested, that both the boys and the girls will gladly give all the assistance they can to maintain the beauty of the schoolgrounds.

About the end of August last year I had occasion to be in Napinka over night, and while there, I was asked by a friend to walk around to the public school grounds; and, while no doubt there are other schoolgrounds that are kept in as good condition as those at Napinka, it has never been my pleasure or privilege to visit in Manitoba such beautiful and well kept public schoolgrounds as this one. It was there almost at the end of the summer holidays, and these grounds did not show the least appearance of neglect or trespass, although the children of the town had the fullest privilege of using the playgrounds for games during the holidays.

I asked my friend, Mr. Cosgrove, if any difficulty was experienced in preventing the children from doing any damage to the grounds and his reply was: "Just let any one be caught doing anything to mar the beauty or orderliness of the school grounds, and you will soon know what interest the boys and girls as well as the parents are taking in them."

I was informed that the janitor of the school, an old country gardener, attends to all the work around the grounds, and, in addition to this, to a large extent, looks after the horticultural work in the local cemetery at Napinka.

In conclusion I would say, on behalf of the Manitoba Horticultural and Forestry Association and, I believe, also on behalf of the numerous affiliated horticultural societies scattered throughout the various cities and towns of the province, that every assistance and encouragement will be freely given to school trustees or others interested in this work.

VARIETAL FRUIT LIST—1925

Prepared by Committee of Manitoba Horticultural and Forestry Association
(W. R. Leslie, Chairman), and Adopted at the 1926 Convention.

Arranged according to comparative degrees of hardness. The hardest varieties are numbered 1; next hardest, 2; and so on.

CRAB APPLES

1. **Siberian Crab.** (Berried crab, *Pyrus baccata*); **Red Siberian:** **Yellow Siberian.** (These varieties are recommended for their ornamental purposes. They are also valuable to provide pollen for other crab and other apple varieties.)
2. **Osman.** A medium sized crab, roundish with generous deep red coloring. **Columbia.** Medium size, ovate, with moderate red blush.
3. **Bedford.** Round, under medium size, mostly red color. **Silvia.** Medium size, ovate, white, good to eat out of hand. **Robin.** Medium size, round deeply sutured, red blush.
4. **Phillips.** Medium size, roundish, slight red blush, a sweet crab. **Florence.** Medium size, flat round, heavy red blush with stripes. **Wappella.** Large angular ovate, red blush, good keeper.
5. **Rosilda, Angus, Trail, Whitney.** These are large crabs of good quality. They are worthy of limited trial. Other hardy varieties: **Mecca, Dolgo, Piotosh, Olga, Amur.** Other varieties of doubtful hardness such as class 5: **Martin; Lyman's Prolific.**

Note:—**Transcendent** is an excellent crab, but not recommended because of its proneness to be destroyed by fire blight. **Hyslop** is not a fruitful variety in Manitoba.

APPLES

Note:—In hardness Class No. 1 corresponds to No 3 of the crab list. Classes 1, 2, 3, are worthy of extended and general trial. Classes 4 and 5 are recommended chiefly for favorable situations south of Winnipeg.

1. **Hibernal.** A large apple, round ovate, red blush and stripes. Excellent for
- cooking. **Blushed Calville.** Medium sized, round ovate, white, ripens in August. A short keeper, a summer apple, for dessert and cooking. **Pine Grove Red.** Small to medium size, red blush, ripe in September. Keeps till New Year, for dessert and cooking.
2. **Anisette.** A hardy form of **Duchess** (of Oldenburg). **Simbrisk No. 1.** Medium size, red blush and stripes. Ripe in late September. Autumn apple, short keeper, excellent for dessert and cooking.
3. **Antonovka.** A large angular ovate, white apple. Ripe in late September. Keeps until November; fair for dessert and cooking. **Ostrokoff.** (Glass) Medium size, round, green with red blush. Ripe in late September. Keeps until Christmas; fair for dessert; good for cooking. **Duchess** (of Oldenburg). Round, with red blush and stripes. Ripe in September. Keeps until October. Fair for eating and good for cooking. **Haralson.** Medium large, long round red apple with dull red blush and stripes. Ripe in late September; keeps until March. Fair for a dessert, good for cooking.
4. **Repka Kisloga.** (Beautiful Areade; Good Peasant) Small to medium, roundish, light blush, ripe in September. Short keeper. A sweet apple, fair for dessert and for cooking. **Perkin.** Large, red blush and stripes, long round ovate, ripe in September, fair keeper and good quality. **Red Wing.** Medium size, red blush and stripes, roundish, ripe in September, fair keeper, medium quality.
5. **Wealthy.** Medium to large, red blush and stripes, roundish, ripe in late September, keeps until late November. Good general purpose apple. Other hardy varieties: **Pinto; Volga Anis; Dudley; Crusoe; Red Transparent.** Other varieties of doubtful hardness: **Yellow Transparent** and **Crimson Beauty.**

PLUMS

Note:—Degrees of hardiness similar to those of Crab apple list.

1. Native Manitoba Plums; Mammoth; Assinaboine; Valley River; Stevens.
2. Cheney; Pembina; Cree.
3. Ojibwa.
4. Waneta; Omaha.
5. Emeralds; Hanska; Kaga; Tokata; Red Wing.

Other varieties which are comparatively hardy:—Winnipeg; Mankato; Earliest (Minn. No. 131.).

Other varieties of doubtful hardiness:—Underwood; Oziya; Stella; La Crescent; Golden Rod; Loring Prize.

SAND CHERRY AND PLUM HYBRIDS

3. Sapa; Opata; Tom Thumb; Champa; Sansota; Zumbra.
 4. Compass Cherry.
- Other such Hybrids:— St. Anthony; Cheresoto; Etopa; Ezaptan.

CHERRIES

1. Native Pin Cherry; Choke Cherry; Sand Cherry.
4. Bessarabian; Vladimir.
5. Ostheime; Japanese Cherry (*Prunus tomentosa*).
6. English Morello; Early Richmond; Montmorency.

**RASPBERRIES, RED**

1. Ohta; Herbert.
2. Latham; Newman No. 23; King; Miller.

Note:—Herbert and Ohta are freer from Mosaic and Leaf Curl in Manitoba than are most varieties of raspberries.

RASPBERRIES, WHITE

None worthy of recommendation except as tender novelties.

RASPBERRIES, BLACK

3. Hilborn.

RASPBERRIES, PURPLE CANE

None worthy of general recommendation.

BLACKBERRIES

3. Native Blackberries or Thimbleberries of Rainy River District.

CURRANTS, RED

1. Perfection; Fay; Prolific; Red Cherry; Diploma; Prince Albert (Late variety).

CURRANTS, WHITE

1. White Imperial; White Grape.

CURRANTS, BLACK

1. Saunders, Climax; Clipper; Black Champion; Black Naples.
2. Boskoop Giant.

GOOSEBERRIES

1. Houghton.
2. Pearl; Smiths' Improved; Carrie.

STRAWBERRIES, JUNE BEARING

1. Dakota.
2. Senator Dunlop; Easy Picker; Dr. Burrill; Portia; Minnesota.

(Note, the varieties Easy picker and Portia have imperfect flowers).

STRAWBERRIES, EVER BEARING

2. Progressive; Champion.

Note:—All strawberry plants to be protected with straw or brush mulch during the winter.

GRAPES

1. Native Grape or Fox Grape.
3. Alpha; Beta.
4. Hungarian.

NATIVE FRUITS OTHER THAN ABOVE

Saskatoon (Sugar Pear; June Berry; or Service Berry.)

Pembina (Summerberry sometimes wrongly called High Bush Cranberry. Let us give it the Redman's name), "Pembina" meaning Summer Berry, in the language of the Prairie Indians.)

Buffalo Berry

Blueberries (found on acid soil)

Cranberries. (found on acid swampy soil)

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The Manitoba Horticultural and Forestry Association

is a Provincial Organization incorporated under a Special Act of the Legislature of Manitoba. Its object is to encourage Horticulture by the holding of meetings, publication of literature, compilation of facts in relation to Horticulture, distribution of trial plants and by any other practical means.

Annual Membership (direct) \$1.00 per year (payable to the Secretary-Treasurer).

Provision is made in the Horticultural Societies Act (1921) for affiliation with the Manitoba Horticultural and Forestry Association of Horticultural Societies at local points in the Province. The special rates and conditions under which such affiliation may be effected, may be learned on correspondence with the Secretary of the Association.

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